# Integrated Pest Management (IPM) Guide for Common Weeds

Northwest Weed Management Partnership - Revised February 24, 2011

Disclaimer: This document is a basic guide and assumes no liability toward product efficacy, loss of non-targeted plants, or personal safety issues. Always follow label instructions, wear proper safety gear, and avoid herbicide drift. If in doubt as to control practices, consult a licensed treatment contractor. Please refer to the PNW Weed Management Handbook http://uspest.org/pnw/weeds/ for specific herbicide recommendations.

| Species | Mechanical | Chemical | IPM | Notes/Tips |
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| **Armenian (Himalayan) Blackberry**<br><br>**Evergreen Blackberry**<br><br>**European Blackberry** | - Mow at least twice a year: June and September.<br><br>- For small patches, grub roots in the winter through early summer when soil is moist. Be sure to remove root collar.<br><br>- Re-seed area with native grasses, trees, and shrubs.<br><br>- Be persistent! New vines are always showing up.<br><br>-Shading is the best long-term non-chemical approach to blackberry control<br>- Repeat disking desiccates roots limiting regrowth. | -Treat with Crossbow or Garlon 3A in the mid to late summer or fall, usually in September/October. Garlon 4/Escort combo is the most effective mix and offers a longer treatment window.<br><br>- Glyphosate at 2% is also effective in Sept - October before first frosts.<br><br>- In mixed stands of blackberries and snowberries (common in riparian areas) you can spray over the top of both in the fall using Garlon 3A and MSO surfactant without any ill effect on snowberries. Silicon based surfactants will damage non-target plants. | - Mow in June and allow for regrowth, then spray in fall.<br><br>-Treat with Garlon 3A or Crossbow in September.<br><br>- A cut stump treatment works well, and prevents overspray and drift. Cut the stem next to the ground and, using a brush, sponge, or small spray bottle, apply a 50% solution of glyphosate and water immediately after cutting to the cut stem. | - A rust that stunts blackberry growth was accidentally introduced to the United States. The rust in spreading, but its impact appears to be dependent on local climate (i.e., dry weather is not conducive to the rust). |
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| **Scotch Broom**<br><br>**French Broom**<br><br>**Portuguese Broom** | - Cutting large plants (stem greater than 1/2 inch) is very effective without herbicides in the mid July-Sept.<br><br>- Pull smaller plants (less than 1/2 inch) by hand or with a weed wrench.<br><br>- Mowing is sometimes done to knock down large Scotch broom patches, but should be avoided when seed pods are ripe. Also, keep in mind there is a good chance that seeds already on the ground will be spread by mowing.<br><br>- Early season mowing typically results in dense, multi-stemmed regrowth; great for spraying, not so great for “lop and leave.” | - If possible, spray Scotch broom before and after bloom when it is growing vigorously.<br><br>- Water stress in late summer can cause reduced herbicide effectiveness.<br><br>- Garlon 3A or 4, glyphosate, and Crossbow are all effective. Be careful of surrounding vegetation!<br><br>- Garlon 3A and Milestone mixed are very effective and don’t require complete coverage of plant for total control. Care must be taken around trees and shrubs due to Milestone’s soil activity.<br><br>-Treat new seedlings every year. | - Mow in early spring.<br><br>-Treat regrowth in fall or the following spring with Garlon, Milestone VM Plus or Crossbow.<br><br>- You can also use glyphosate (Round Up) for early fall treatments, though results may be marginal on thicker stems. Application will kill non-target vegetation.<br><br>- Cut stumps often don’t need herbicide treatment if they are an inch in diameter or bigger. Late summer cutting is best. | -- Don’t mow Scotch broom when seed pods are ripe.<br><br>- Pulling large plants with a weed wrench creates ideal growing conditions for seed bank so consider cutting instead. A battery powered reciprocating saw is a great tool for cutting large stems.<br><br>- Seed treatment area heavily with grass to shade out Scotch broom seedlings.<br><br>- Calibrate sprayer well and watch your rates. |

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| **Pasture Weeds** (broad-leaf weeds in grass pasturage)<br><br>Includes: tansy ragwort, teasel, thistles, dock, St. John's wort, *et al*) | - IMPORTANT: Mow <u>before</u> seed formation.<br><br>- Except for Canada thistle, hand digging is feasible for small infestations.<br><br>- Cut and bag all seed heads, and burn or dispose of them to prevent spread of seeds. | - IMPORTANT: Spring application is critical. Apply herbicides BEFORE plants flower.<br><br>- The following herbicides are effective: 2,4-D, Weedmaster, Garlon 3A, Curtail, Stinger, and Milestone. Important note: don't use manure derived from Milestone or chlopyralid treated pasture or hay in gardens or organic operations. These compounds persist in the manure.<br><br>- Stinger and Curtail are effective on Canada thistle when plants are short (less that 6") to full height. Glyphosate is only effective when plants are in late bud to flower stage or on fall regrowth.<br><br>- If you want to save clover, use MCPA. All others will eliminate clovers. | - Introduce goats with other grazers. Goats prefer broad leaved plants. Don't over graze.<br><br>- If you miss spring spray time, you can mow in early summer and spray in the fall. This approach works well for Canada thistle and tansy.<br><br>- Keep pasture grass competitive by maintaining high fertility. | - There may be a biocontrol agent already present!<br><br>- No tansy ragwort biocontrols? Don't panic - the bugs will come! Biocontrol agents cycle with the plant population and will become more abundant and effective as tansy becomes more abundant.<br><br>- Cut, bag and dispose of tansy ragwort and teasel seed heads. |
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| **English Ivy** | - Protect trees and prevent seed production by cutting vines around tree trunks. Clear ivy three feet out from the base of the tree.<br><br>- Using rakes and shovels vines can be pulled and rolled down a slope like a carpet.<br><br>- Goats and sheep <u>LOVE</u> ivy, and can be used to clear areas prior to pulling of the roots. | -The current hot ticket: 4% Accord Concentrate (glyphosate)] + 2% Garlon 3A (triclopyr amine) + 2% Competitor (modified vegetable oil (MSO) surfactant.<br><br>- If possible, apply during dry periods in late winter or early spring before native plants leaf out or emerge.<br><br>- You will not notice effects until weeks, if not months later, so be patient! | - Cut ivy away from trees and apply foliar herbicide treatment to leaves on the ground.<br><br>- Cut ivy trunks back to ground and paint or spot spray them with Garlon. | - If you do nothing else, keep ivy out of the trees!!<br><br>- Cut the climbing vines, taking a good chunk out of them so they don't grow back together. This also ensures you don't miss any of the small vines that might be mixed in hidden in the larger ones. |
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| **Parking lot weeds** (puncture vine, prostrate knotweed, *et al*) | - Burn 'em out - apply early season flaming.<br><br>- Hand pull large weeds early in season.<br><br>- Apply fresh gravel on a regular basis. | - A wide range of herbicide products can be used to initially control the vegetation.<br><br>-Try using vinegar based weed products on individual plants. | - Pull/hoe when you can; if things get away from you, apply herbicides.<br><br>- Smothering with fresh gravel over a residual treatment helps sustain longer control. | - Control early and stick to it, as seasonal annuals sprout at different times of the year) and new species are introduced. |

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| **False Brome** | . - Mowing can be used to remove/deplete annual seed production Optimal mowing for this purpose is June (plants will still flower when mowed earlier).<br><br>- Hand pulling small patches is best in April and early May.<br><br>-Mulching with clean, weed free straw works well to suppress false brome for at least two years | - Broadcast application of a glyphosate-based herbicide such as Roundup, is effective in mid May through fall.<br><br>- OSU field trials suggest tank mixing glyphosate (2%) with a preemergent herbicide such as Surflan (3.3%) applied in October. This kills mature plants AND stops seeds from germinating.<br><br>- Apply herbicides in fall after first rains, as that is when the plants start growing again | - To reduce the amount of herbicide used, mow for several years to eliminate soil seed bank. Then treat with herbicide.<br><br>Also, burning followed by spot-spraying after the grass resprouts can minimize the amount of herbicide needed<br><br>- You can also mow in June, and then treat with Roundup in the fall. | - False brome is spreading fast. Slow the spread by making sure clothing and equipment are free of seeds before you leave an infested site.<br><br>- Put up informational signs at trailheads to urge hikers to clean clothes, pets, and OHVs. |
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| **Garlic Mustard** | - Mowing is **not** an effective control because plants will still bolt and seed<br><br>- Mowing spreads garlic mustard seed like wildfire - do not mow when seed pods are present (May - Sept.)<br><br>- Hand pulling is easiest during early bolt (2nd year). Difficult during rosette stage (first year) except for small patches<br><br>- Multiple years are needed to exhaust seed bank<br><br>- Pull at base to avoid breaking stem<br><br>- All pulled plants must be bagged and removed | Most important time to spray is in early spring (typically early April-late May) during bolting or early flowering to prevent seeding.<br><br>Rosettes can be sprayed in early fall after rain events end summer dormancy but before leaves begin to fall from trees and cover garlic mustard plants (typically late September-early October).<br><br>Rosettes can also be sprayed in late winter, but this is only effective after winter dormancy ends. Garlic mustard often dies back in the winter so you must wait until the great majority of plants have re-sprouted.<br><br>Rosette treatments at the height of summer may be least effective due to summer dormancy.<br><br>Garlon 3A and glyphosate are highly effective. Garlon 3A will not kill grasses. Surfactants greatly increase efficacy of herbicide treatments. | Combination of spring herbicide application followed by hand pulling is very effective.<br><br>Spray bolting and early flowering plants in early spring (typically early April-late May). Revisit sprayed sites in early June (once seeds are formed and spraying has become ineffective) to hand pull any plants that were missed or bolted after spraying. Pulled plants must be bagged and removed from the site.<br><br>Revisit sites if possible after initial pull and be prepared to repeat pulling if smaller or later growing plants bolt.<br><br>Fall rosette treatments can also be added to this IPM method as directed in Chemical section of this document. | Multiple years are needed to exhaust seed bank, which can last at least 5 years, possibly more.<br><br>Spray before the plant goes to seed! Once seed passes early seed set (milk into dough stage) it will still be viable if sprayed.<br><br>Consider impact of crews – clean boots, clothing, and machinery before moving from areas with garlic mustard plants/seed into uninfested areas! |
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| **Yellow Flag Iris** | - Not effective on large infestations<br><br>- Repeated mowing or cutting in early summer before seeds mature may contain/kill by depleting energy after <u>many years</u> of intensive mowing.<br><br>- Small infestations may be pulled or dug out. All rhizomes must be removed. Incomplete removal may enhance spread of plant.<br><br>- Cutting and covering with landscape fabric or durable tarps moderately successful.<br><br>- Bag and dispose of mature seed heads and bulbs to reduce spread. | Habitat (imazapyr) and Rodeo (glyphosate labeled for aquatic usage) at the following ratio: Habitat at 1% and Rodeo at 1.5%, with seed oil added to the mix. | - Very small infestations can be dug; dispose of plants and tubers in landfill or dry and burn.<br><br>- Contain existing colonies by suppression and prevention of seed spread. | - Do not compost any parts of plant.<br><br>- If using a herbicide use a surfactant to get maximum product penetration.<br><br>- Resins in leaves and rhizome can cause skin irritation, wear hand protection when handling.<br><br>- Applications of aquatic imazapyr products require a licensed applicator. |
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| **Spurge Laurel** | - Hand pull small plants.<br><br>- Larger plants can be pulled with a weed wrench or similar tool. All of the root should be removed to avoid re-growth from root sprouts.<br><br>- After pulling, area should be monitored for new seedlings and covered with a deep mulch.<br><br>- More cost effective to use mechanical methods for large populations. Plants up to three years old can be controlled by cutting the plant close to the ground. Older plants should be cut below the soil line to minimize re-sprouting. | - Cut plants can sprout from suckers, so it is advisable to apply herbicide to stems immediately following cutting.<br><br>- Triclopyr has been shown to be effective. Please refer to the <u>PNW Weed Management Handbook</u> for specific herbicide recommendations. | - Public education.<br><br>- Report infestations to county weed board or appropriate authority.<br><br>- Treat small infestations by pulling.<br><br>- Cut larger plants close to ground and spray cut stump. | - Note: there are irritating toxins in the sap, fruit and leaves. <u>Wear gloves and other protective clothing when removing or cutting</u>. |
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| **Shining Geranium** | - Hand-weed isolated plants or small populations before they are in seed.<br><br>- Burning with a propane-based flaming unit is effective if done several times each growing season.<br><br>- Cover with sheet mulch for at least two growing seasons (although this method has not been tested on shining geranium).<br><br>- Heavy mulch (wood debris, chips, etc.) about 3 inches thick has worked well to suppress the plants. | - Plants can be sprayed before flowering (late March through April) with either a broadleaf herbicide (if growing with desirable grasses) or with a non-selective herbicide.<br><br>- Reportedly, an over the counter product labeled Finale seems to work well, according to ODA. | -Public education, plant and seed available at nurseries and on internet. | Please refer to herbicide labels for site specific control information and refer to the PNW Weed Management Handbook for additional information on herbicide use. |
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| **Knotweeds** (Japanese, giant, Himalayan) | - Mowing or cutting alone is ineffective and typically encourages the knotweed roots to spread outward.<br><br>- Digging is very labor intensive, generally causes more harm than good, and should only be reserved for very small patches in upland areas. | - IMPORTANT: Don't spray glyphosate in early summer. Spray from onset of flowering through September but before first frost!!<br><br>- Injection tools are effective and are most economical on larger diameter stems. This tool should be used in combination with foliar treatments to ensure treatment of small understory stems.<br><br>- Do foliar application in mid-August through September w/ Glyphosate, Triclopyr, or Habitat. Habitat offers a larger treatment window starting in mid summer. Coverage is critical. Take care not to spray foliage of non-target shrubs and trees.<br><br>- If knotweed is found near water, use herbicides approved for riparian use, such as Aquamaster, Rodeo, Habitat, or Garlon 3A. | -To reduce overall herbicide use, cut patches in June, allow to regrow and spray in September. Dispose any cuttings where they are guaranteed not to resprout! Lack of otherwise full growth may mean that herbicide application is not as effective (due to small leaf area) but it allows large patches to me more manageable in the future.<br><br>- | - Report sightings to local Soil and Water Conservation Districts or Watershed Council.<br><br>- Remember, coverage is more important than product concentration! Applications should be directed to both top and underside of canopies to ensure perfect coverage. Over-the-top treatments miss many smaller stems, resulting in regrowth.<br><br>- Please refer to herbicide labels for site specific control information and refer to the PNW Weed Management Handbook for additional information on herbicide use. |
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| **Herb Robert** | Manual control is very effective and is often the best. Plants are relatively easy to grub out, provided the soil is not hard and compacted. Plants do not regenerate from roots or fragments.<br><br>- Mowing or weed eating prevents plants from producing seed. It must be done frequently, as plants will continually produce flowers from early spring until late fall. | - Spot spraying with glyphosate during active growing season, but preferably before seed. Spray plants until they are wet, but not dripping, and not onto the surrounding soil or other vegetation.<br><br>- Herb Robert is a low-growing plant that is often growing among desirable vegetation; applications of herbicide should be used only where there are large numbers of plants, or in soil conditions that make manual control difficult. | - Public education, plant and seed available at nurseries and on internet. | - Please refer to herbicide labels for site specific control information and refer to the PNW Weed Management Handbook for additional information on herbicide use.<br><br>- Check nursery stock for seedlings, and don't bring plants home from infested wooded areas.<br><br>- Also, wash down boots and shoes, tools, vehicles and pets after visiting parks, forests or other areas where there are populations of Herb Robert.<br><br>- Dispose plants that have been weeded in the trash |
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| **Rush Skeleton Weed (*Chondrilla juncea)*** | Physical and mechanical control methods used for rush skeletonweed control include hand-pulling or digging, cutting or mowing, and plowing or cultivation.<br><br>Removing rush skeletonweed plants is easier when the soil is wet. Pulled plants should be destroyed by burning in a very hot fire to ensure seed and root destruction. | **Rate** 2 lb ae/A<br>**Time** Apply to rosettes in the spring immediately before or during bolting.<br>**Remarks** 2,4-D inhibits further aboveground growth but will not prevent new plant development from root buds.<br>**Caution** Re-treatment is important.<br>**Site of action** (both) Group 4: synthetic auxin<br>**Chemical family** (both) phenoxy acetic acid | No single treatment provides long-term control of rush skeletonweed, so an integrated strategy must be adopted. The first line of defense is to prevent introductions of rush skeletonweed with systematic surveys, early detection, and implementation of an eradication program on small infestations. | Seeds are dispersed by wind, water, vehicles, and machinery. Once established, rush skeletonweed is extremely difficult to control using herbicides, primarily due to the difficulty of translocating herbicides into its extensive root system |
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| **Tree of Heaven (*Ailanthus altissima)*** | Cutting alone is usually counter-productive because ailanthus responds by producing large numbers of stump sprouts and root suckers. However, for small infestations, repeated cutting of sprouts over time can exhaust the plants reserves and may be successful if continued for | The most effective method of ailanthus control seems to be through the use of herbicides, which may be applied as a foliar (to the leaves), basal bark, cut stump, or hack and squirt treatment. Keep in mind that it is relatively easy to kill the above ground portion of ailanthus trees, you need to kill or seriously | A combination of complementary control methods may be helpful for rapid and effective control of tree-of-heaven. Integrated management includes not only killing the target plant, but establishing desirable species and | Young seedlings may be pulled or dug up, preferably when soil is moist. Care must be taken to remove the entire plant including all roots and fragments, as these will almost certainly regrow. If only a single cutting |

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| | many years or where heavy shade exists. If possible, the initial cutting should be in early summer in order to impact the tree when its root reserves are lowest. Cutting large seed producing female trees would at least temporarily reduce spread by this method. | damage the root system to prevent or limit stump sprouting and root suckering. Always be extremely careful with herbicide applications in the vicinity of valuable ornamental shrubs and trees. | discouraging nonnative, invasive species over the long term. Some examples include smooth sumac, black walnut (*Juglans nigra*), Oregon white oak (*Quercus garryana)*, and ponderosa pine (*Pinus ponderosa)*. | can be made, the best time is when the plants begin to flower. |

**Important Notes:**

- Always read the entire label before using any herbicide. Wear safety gear and mix herbicides in a safe environment.
- A surfactant and indicator dye will help with control and efficacy. Note regarding surfactants: Just as with herbicides, read label directions! Some surfactants are appropriate for use with certain herbicides but not others. Also, if using a surfactant on or near water, read label directions to see if the surfactant you are using is approved for aquatic environments.
- Glyphosate-based products, such as Roundup and Rodeo are non-selective -- they will kill all green plants!
- Herbicides typically work best when applied on temperate (~ 60 - 72 degrees) non-windy days followed by 12 hours of no rain. If temps are cooler and/or there has been limited rainfall, the effects of herbicide application will take longer to become apparent.
- Plant material disposal: Dry and/or burn pulled or cut plant material. Dry the plant material on a tarp or plastic barrier to prevent soil contact with roots.
- Once weeds are reduced or eradicated it is critical to seed or plant the treated area, preferably with natives. Open ground, or one with sparse vegetation, is very likely to come back as a first-class weed patch!

Please consider songbirds and pollinator species when doing weed treatments! Some excellent information can be found at these links:

Protecting nesting songbirds: http://www.portlandonline.com/bes/fish/index.cfm?a=322164&c=31006

How to Reduce Bee Poisoning from Pesticides: http://extension.oregonstate.edu/catalog/pdf/pnw/pnw591.pdf